W03760

0057843

Analytical Data Package Prepared For

Bechtel Hanford

Radiochemical Analysis By

STL Richland

2800 G.W. Way, Richland, Wa 99352, (509) 375-3131

Assigned Laboratory Code: STLRL

Data Package Contains 30 Pages

Report No.: 19552

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
W03760	B02-032	B14JB2	J2D230207-1	E0AM91AC	9E0AM910	2113394
		B14JB2	J2D230207-1	E0AM91AA	9E0AM910	2113395

SEVERN TRENT SERVICES

CERTIFICATE OF ANALYSIS

Bechtel Hanford, Inc.
3350 George Washington Way
Richland, WA 99352

May 13, 2002

Attention: Joan Kessner

SAF Number	:	B02-032
Date SDG Closed	:	April 23, 2002
Number of Samples	:	One
Sample Type	:	Air Filter (Solid)
SDG Number	:	W03760
Data Deliverable	:	21-Day / Summary

I. Introduction

On April 23, 2002, one air filter (solid) sample was received at STL Richland (STLR) for radiochemical analysis. Upon receipt, the sample was assigned the following laboratory ID number to correspond with the Bechtel Hanford, Inc. (BHI) specific ID:

STLR ID#	BHI ID#	MATRIX	DATE OF RECEIPT
E0AM9	B14JB2	SOLID	4/23/02

II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

The requested analyses were:

Gamma Spectroscopy
Gamma Scan by method RICH-RC-5017
Gas Proportional Counting
Total Strontium by method RICH-RC-5006

III. Quality Control

The analytical results for each analysis performed under SDG W03760 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

IV. Comments

Gamma Spectroscopy
Gamma Scan by method RICH-RC-5017:
There was insufficient sample material to meet the CRDLs. Except as noted, the LCS, batch blank, samples and sample duplicate (B14JB2) results are within contractual requirements.

Gas Proportional Counting
Total Strontium by method RICH-RC-5006:
There was insufficient sample material to process a batch sample duplicate. Except as noted, the LCS, batch blank, and sample results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the following signature.

Reviewed and approved:

Barbara M. Gillespie
Project Manager

Drinking Water Method Cross References

	DRINKING WATER ASTM METHOD CROSS REFERENCES	
Referenced Method	**Isotope(s)**	**STL Richland's SOP number**
EPA 901.1	Cs-134, I-131	RICH-RC-5017
EPA 900.0	Alpha & Beta	RICH-RC-5014
EPA 903.1	Ra-226	RICH-RC-5005
EPA 904.0	Ra-228	RICH-RC-5005
EPA 905.0	Sr89/90	RICH-RC-5006
ASTM D2460	Total Radium	RICH-RC-5027
Standard Method 7500-U-C & ASTM D5174	Uranium	RICH-RC-5058
EPA 906.0	Tritium	RICH-RC-5007
NOTE:		
The Gross Alpha LCS is prepared with Am-241 (unless otherwise specified in the case narrative)		
The Gross Beta LCS is prepared with Sr/Y-90 (unless otherwise specified in the case narrative)		

Uncertainty Estimation

STL Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, R = constants * f(x,y,z,...). The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value (S/vn), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or STL Richland.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (#s) ***u_c - Combined Uncertainty.***	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, ***u_c the combined uncertainty.*** The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or STL Richland "default" nominal detection limit. Often referred to the reporting level (RL)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. Lc=(1.645 * Sqrt(2*(BkgrndCnt/BkgrndCntMin)/SCntMin)) * (ConvFct/(Eff*Yld*Abn*Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC|MDA	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. MDC = (4.65 * Sqrt((BkgrndCnt/BkgrndCntMin)/SCntMin) + 2.71/SCntMin) * (ConvFct/(Eff * Yld * Abn * Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUcert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the **Work Order** Number.
RER	The equation Replicate Error Ratio = (S-D)/[sqrt($TPUs^2$ + $TPUd^2$)] as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by STL Richland upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

Sample Results Summary

STL Richland STLRL

Ordered by Client Sample ID, Batch No.

Date: 14-May-02

Report No. : 19552

SDG No: W03760

Client ID	Work Order Number	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	MDC|MDA	RER
B14JB2	E0AM91AC	STRONTIUM	-7.46E-02 +- 2.5E-01	U	pCi/sample	86.90%	5.67E-01	
B14JB2	E0AM91AA	CO-60	1.42E+00 +- 2.3E+00	U	pCi/sample		4.58E+00	
		CS-137	3.67E-01 +- 1.9E+00	U	pCi/sample		3.45E+00	
		EU-152	1.12E+00 +- 4.7E+00	U	pCi/sample		8.46E+00	
		EU-154	1.81E+00 +- 5.3E+00	U	pCi/sample		1.06E+01	
		EU-155	1.74E+00 +- 4.4E+00	U	pCi/sample		8.12E+00	
B14JB2 DUP	E0AM91AE	CO-60	1.44E+00 +- 1.8E+00	U	pCi/sample		3.87E+00	
		CS-137	6.79E-02 +- 1.7E+00	U	pCi/sample		3.11E+00	
		EU-152	-9.37E-01 +- 3.9E+00	U	pCi/sample		6.74E+00	
		EU-154	3.82E-01 +- 5.4E+00	U	pCi/sample		1.03E+01	
		EU-155	6.43E-01 +- 2.7E+00	U	pCi/sample		4.71E+00	

Number of Results: 11

RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.

U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

QC Results Summary
STL Richland STLRL

Ordered by QC Type, Batch No.

Date: 14-May-02

Report No. : 19552

SDG No.: W03760

QC Type	Work Order Number	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	Recovery	Bias	MDC|MDA
BLANK QC	E0AW41AA	STRONTIUM	-2.44E-01 +- 2.3E-01	U	pCi/sample	88.60%			5.40E-01
BLANK QC	E0AW61AA	CO-60	-6.18E-01 +- 2.0E+00	U	pCi/sample				3.56E+00
		CS-137	5.62E-01 +- 1.6E+00	U	pCi/sample				3.10E+00
		EU-152	2.90E-01 +- 4.2E+00	U	pCi/sample				7.41E+00
		EU-154	5.44E-03 +- 6.1E+00	U	pCi/sample				1.13E+01
		EU-155	-5.81E-01 +- 2.8E+00	U	pCi/sample				4.82E+00
LCS	E0AW41AC	STRONTIUM	6.02E+00 +- 1.8E+00		pCi/sample	83.90%	87.33%	-0.1	6.03E-01
LCS	E0AW61AC	CO-60	7.56E+01 +- 1.2E+01		pCi/sample		97.63%	0.0	4.95E+00
		CS-137	4.65E+01 +- 9.5E+00		pCi/sample		92.79%	-0.1	4.64E+00
		EU-152	1.61E+02 +- 2.3E+01		pCi/sample		104.79%	0.0	1.01E+01

Number of Results: 10

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM I

SAMPLE RESULTS

Date: 14-May-02

Lab Name: STL Richland | **SDG:** W03760 | **Collection Date:** 4/23/2002 10:30:00 AM

Lot-Sample No.: J2D230207-1 | **Report No. :** 19552 | **Received Date:** 4/23/2002 10:45:00 AM

Client Sample ID: B14JB2 | **COC No. :** | **Matrix:** SOLID

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC | MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rsl/MDC, Rsl/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2113394	**Work Order:** E0AM91AC			**Report DB ID:** 9E0AM910								
STRONTIUM	-7.46E-02	U	2.5E-01	2.5E-01	5.67E-01	pCi/sample	86.90%	*-0.13*	5/10/02 07:06 p	1.0	1.0	SRISO_SEP_PRECIP
					2.70E-01			*-0.6*		Sample	Sample	GPC28A
Batch: 2113395	**Work Order:** E0AM91AA			**Report DB ID:** 9E0AM910								
CO-60	1.42E+00	U	2.3E+00	2.3E+00	4.58E+00	pCi/sample		*0.31*	4/30/02 05:40 a		1.0	GAMMA_GS
								(1.3)			SA	GER3$1
CS-137	3.67E-01	U	1.9E+00	1.9E+00	3.45E+00	pCi/sample		*0.11*	4/30/02 05:40 a		1.0	GAMMA_GS
								0.39			SA	GER3$1
EU-152	1.12E+00	U	4.7E+00	4.7E+00	8.46E+00	pCi/sample		*0.13*	4/30/02 05:40 a		1.0	GAMMA_GS
								0.47			SA	GER3$1
EU-154	1.81E+00	U	5.3E+00	5.3E+00	1.06E+01	pCi/sample		*0.17*	4/30/02 05:40 a		1.0	GAMMA_GS
								0.69			SA	GER3$1
EU-155	1.74E+00	U	4.4E+00	4.4E+00	8.12E+00	pCi/sample		*0.21*	4/30/02 05:40 a		1.0	GAMMA_GS
								0.78			SA	GER3$1

Number of Results: 6

Comments:

8000

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 14-May-02

DUPLICATE RESULTS

Lab Name: STL Richland **SDG:** W03760 **Collection Date:** 4/23/2002 10:30:00 AM

Lot-Sample No.: J2D230207-1 **Report No. :** 19552 **Received Date:** 4/23/2002 10:45:00 AM

Client Sample ID: B14JB2 DUP **COC No. :** **Matrix:** SOLID

Parameter	Result, Orig Rsl	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, CRDL	Yield	Rsl/MDC, Rsl/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2113395	Work Order: E0AM91AE			Report DB ID: E0AM91ER		Orig Sa DB ID: 9E0AM910						
CO-60	1.44E+00	U	1.8E+00	1.8E+00	3.87E+00	pCi/sample		0.37	5/1/02 05:43 a		1.0	GAMMA_GS
	1.42E+00	RER	0.0					(1.6)			SA	GER8$1
CS-137	6.79E-02	U	1.7E+00	1.7E+00	3.11E+00	pCi/sample		0.02	5/1/02 05:43 a		1.0	GAMMA_GS
	3.67E-01	RER	0.2					0.08			SA	GER8$1
EU-152	-9.37E-01	U	3.9E+00	3.9E+00	6.74E+00	pCi/sample		-0.14	5/1/02 05:43 a		1.0	GAMMA_GS
	1.12E+00	RER	0.7					-0.48			SA	GER8$1
EU-154	3.82E-01	U	5.4E+00	5.4E+00	1.03E+01	pCi/sample		0.04	5/1/02 05:43 a		1.0	GAMMA_GS
	1.81E+00	RER	0.4					0.14			SA	GER8$1
EU-155	6.43E-01	U	2.7E+00	2.7E+00	4.71E+00	pCi/sample		0.14	5/1/02 05:43 a		1.0	GAMMA_GS
	1.74E+00	RER	0.4					0.48			SA	GER8$1

Number of Results: 5

Comments:

6009

RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

BLANK RESULTS

Date: 14-May-02

Lab Name: STL Richland **SDG:** W03760

Lot-Sample No.: J2D230000-394 **Report No. :** 19552 **Matrix:** SOLID

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC | MD A,	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2113394	Work Order:	E0AW41AA		Report DB ID:	E0AW41AB							
STRONTIUM	-2.44E-01	U	2.2E-01	2.3E-01	5.40E-01	pCi/sample	88.60%	-0.45	5/10/02 07:06 p	1.0	1.0	SRISO_SEP_PRECIP
					2.56E-01			-(2.1)		Sample	Sample	GPC28B

Number of Results: 1

Comments:

C010

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

BLANK RESULTS

Date: 14-May-02

Lab Name: STL Richland **SDG:** W03760

Lot-Sample No.: J2D230000-395 **Report No. :** 19552 **Matrix:** SOLID

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC | MDA,	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2113395	**Work Order:** E0AW61AA			**Report DB ID:** E0AW61AB								
CO-60	-6.18E-01	U	2.0E+00	2.0E+00	3.56E+00	pCi/sample		-0.17	4/30/02 05:40 a		1.0	GAMMA_GS
								-0.62			SA	GER8$1
CS-137	5.62E-01	U	1.6E+00	1.6E+00	3.10E+00	pCi/sample		0.18	4/30/02 05:40 a		1.0	GAMMA_GS
								0.69			SA	GER8$1
EU-152	2.90E-01	U	4.2E+00	4.2E+00	7.41E+00	pCi/sample		0.04	4/30/02 05:40 a		1.0	GAMMA_GS
								0.14			SA	GER8$1
EU-154	5.44E-03	U	6.1E+00	6.1E+00	1.13E+01	pCi/sample		0.	4/30/02 05:40 a		1.0	GAMMA_GS
								0.			SA	GER8$1
EU-155	-5.81E-01	U	2.8E+00	2.8E+00	4.82E+00	pCi/sample		-0.12	4/30/02 05:40 a		1.0	GAMMA_GS
								-0.41			SA	GER8$1

Number of Results: 5

Comments:

C011

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 14-May-02

LCS RESULTS

Lab Name: STL Richland **SDG:** W03760

Lot-Sample No.: J2D230000-394 **Report No. :** 19552 **Matrix:** SOLID

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC | MD	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 2113394	Work Order: E0AW41AC			Report DB ID: E0AW41CS									
STRONTIUM	6.02E+00		5.7E-01	1.8E+00	6.03E-01	pCi/sample	83.90%	6.89E+00	8.5E-02	87.33%	5/10/02 07:06 p	1.0	SRISO_SEP_PRECIP
						Rec Limits:		.	.	-0.1		Sample	GPC28C

Number of Results: 1

Comments:

2113

FORM II

Date: 14-May-02

LCS RESULTS

Lab Name: STL Richland **SDG:** W03760

Lot-Sample No.: J2D230000-395 **Report No. :** 19552 **Matrix:** SOLID

Parameter	Result	Qual	Count Error (2s)	Total Uncert(2 s)	MDC | MD	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 2113395	**Work Order:** E0AW61AC			**Report DB ID:** E0AW61CS									
CO-60	7.56E+01		1.2E+01	1.2E+01	4.95E+00	pCi/sample		7.74E+01	4.9E-01	97.63%	4/30/02 05:41 a	1.0	GAMMA_GS
						Rec Limits:		.	.	0.0		SA	GER7$1
CS-137	4.65E+01		9.5E+00	9.5E+00	4.64E+00	pCi/sample		5.01E+01	1.7E+00	92.79%	4/30/02 05:41 a	1.0	GAMMA_GS
						Rec Limits:		.	.	-0.1		SA	GER7$1
EU-152	1.61E+02		2.3E+01	2.3E+01	1.01E+01	pCi/sample		1.54E+02	6.2E+00	104.79%	4/30/02 05:41 a	1.0	GAMMA_GS
						Rec Limits:		.	.	0.0		SA	GER7$1

Number of Results: 3

Comments:

C0133

SEVERN TRENT SERVICES

Data Review Checklist
RADIOCHEMISTRY
First Level Review

Lot Number: J2D230207
Client ID: BHI
Due Date: 5-14-02
QC Batch Number: 211395
Method Test Parameter: GAMMA
Matrix: OTHER FILTER
SDG Number: W03760

Review Item	Yes (√)	No (√)	N/A (√)
A. COC 1. Is the ICOC page complete (includes all applicable analysts, dates, SOP numbers and revisions)?	✓		
B. QC Batch 1. Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	✓		
2. Are the QC appropriate for the analysis included in the batch?	✓		
3. Is the Analytical Batch Worksheets complete (includes, as appropriate, volumes, count times, etc.)?	✓		
4. Does the Worksheets include a Tracer Vial label for each sample?			✓
C. QC & Samples 1. Is the blank result, yield and MDA within contract limits?	✓	✓	
2. Is the LCS result, yield and MDA within contract limits?	✓	✓	
3. Are the MS/MSD results, yields and MDAs within contract limits?			✓
4. Are the duplicate results, yields and MDAs within contract limits?	✓	✓	
5. Are the sample yields and MDAs within contract limits?	✓	✓	
D. Raw Data 1. Were results calculated in the correct units?	✓		
2. Were analysis volumes entered correctly?	✓		
3. Were yields entered correctly?			✓
4. Were spectra reviewed/meet contractual requirements?	✓		
5. Were raw counts reviewed for anomalies?			✓
E. Other 1. Are all Nonconformances included and noted? JO5417	✓		
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		

Comments on any "No" response:

First Level Review: [signature] Date: 5-2-02

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

SEVERN TRENT SERVICES

QC Batch Number: 213395

Review Item	Yes (√)	No (√)	N/A (√)
A. Calibration 1. Is the calibration documentation included?			✓
B. Sample Analysis 1. Are the sample yields within acceptance criteria?			✓
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?		✓	
C. QC Samples 1. Is the blank yield within acceptance criteria?			✓
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?		✓	
3. Does the blank result meet the Contract criteria?		✓	
4. Is the blank result < the Contract Detection Limit?		✓	
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?		✓	
6. Is the LCS result within acceptance criteria?	✓		
7. Is the LCS yield within acceptance criteria?			✓
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?		✓	
9. Do the MS/MSD results and yields meet acceptance criteria?			✓
10. Do the duplicate sample results and yields meet acceptance criteria?	✓		
D. Other 1. Are all Nonconformances included and noted?	✓		
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Were units checked?	✓		

Comments on any "No" response: _____

Second Level Review: _____ Date: 5/2/02

0015

Clouseau
Nonconformance Memo

SEVERN TRENT SERVICES

NCM #:	J05417	Classification:	**Anomaly**
NCM Initiated By:	Dale OConnell	Status:	**PMREVIEW**
Date Opened:	05/02/02	Production Area:	Environmental - Prep
Date Closed:	N/A	Tests:	Gamma by GER
		Lot #'s (Sample #'s):	J2D230000 (395); J2D230207 (1)
		QC Batch:	2113395
Nonconformance:	QC Result Out of Limits		
Subcategory:	MDA exceeds RDL		

Problem Description / Root Cause

Name	Date	Description
Dale OConnell	05/02/02	Cause is limited sample quantity, 1 sample, and sequential analysis within a short turn time frame.
Dale OConnell	05/02/02	Insufficient sample to generate a duplicate.

Corrective Action

Name	Date	Corrective Action
Dale OConnell	05/02/02	Report results with MDAs achieved.
Dale OConnell	05/02/02	Precision determination achieved by recounting sample on a different detector.

Approval History

Name	Date Approved:	Position
Dale OConnell	05/02/02	

SEVERN TRENT SERVICES

Data Review Checklist
RADIOCHEMISTRY
First Level Review

Lot Number: J2D230207 P
Client ID: BHI
Due Date: 5/14/02
QC Batch Number: 2113394
Method Test Parameter: TH-TSR
Matrix: Air
SDG Number: W0376C

Review Item	Yes (√)	No (√)	N/A (√)
A. COC 1. Is the ICOC page complete (includes all applicable analysts, dates, SOP numbers and revisions)?	✓		
B. QC Batch 1. Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	✓		
2. Are the QC appropriate for the analysis included in the batch?	✓		
3. Is the Analytical Batch Worksheets complete (includes, as appropriate, volumes, count times, etc.)?	✓		
4. Does the Worksheets include a Tracer Vial label for each sample?	✓		
C. QC & Samples 1. Is the blank result, yield and MDA within contract limits?	✓		
2. Is the LCS result, yield and MDA within contract limits?	✓		
3. Are the MS/MSD results, yields and MDAs within contract limits?			✓
4. Are the duplicate results, yields and MDAs within contract limits?			✓
5. Are the sample yields and MDAs within contract limits?	✓		
D. Raw Data 1. Were results calculated in the correct units?	✓		
2. Were analysis volumes entered correctly?	✓		
3. Were yields entered correctly?	✓		
4. Were spectra reviewed/meet contractual requirements?			✓
5. Were raw counts reviewed for anomalies?	✓		
E. Other 1. Are all Nonconformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		

Comments on any "No" response: _____

First Level Review: Paul Anderson Date: 5-13-02

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

SEVERN TRENT SERVICES

QC Batch Number: 213394

Review Item	Yes (√)	No (√)	N/A (√)
A. Calibration 1. Is the calibration documentation included?			✓
B. Sample Analysis 1. Are the sample yields within acceptance criteria?	✓		X 6mb
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
C. QC Samples 1. Is the blank yield within acceptance criteria?	✓		
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
3. Does the blank result meet the Contract criteria?	✓		
4. Is the blank result < the Contract Detection Limit?	✓		
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
6. Is the LCS result within acceptance criteria?	✓		
7. Is the LCS yield within acceptance criteria?	✓		
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
9. Do the MS/MSD results and yields meet acceptance criteria?			✓
10. Do the duplicate sample results and yields meet acceptance criteria?			✓
D. Other 1. Are all Nonconformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Were units checked?	✓		

Comments on any "No" response: _____

Second Level Review: _____ Date: 5/13/02

LS-038B, Rev.9, 09/01

CHAIN OF CUSTODY

W-21058

RT 4-23-02

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-032-2	Page 1 of 2
Collector: R. Thoren	Company Contact: I.D. Jacques; Telephone No.: 372-9651	Project Coordinator: TRENT, SJ	Price Code 9L; Data Turnaround: 21 Days
Project Designation: B Plant - Air Filter Analysis	Sampling Location: B-Plant	SAF No.: B02-032	Air Quality ☑
Ice Chest No.: SML-001	Field Logbook No.: EL-1562-1; COA: B221BT2W14	Method of Shipment: Gov. Vehicle	
Shipped To: Severn Trent Incorporated, Richland	Offsite Property No.: NA	Bill of Lading/Air Bill No.: NA	

POSSIBLE SAMPLE HAZARDS/REMARKS

Tie to B14J82, J83 & B14J84

Special Handling and/or Storage

None

Preservation	None
Type of Container	P
No. of Container(s)	1
Volume	60mL

SDG W03160 — SAMPLE ANALYSIS — Due 5-13-02 — J2D230207

See item (1) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time	See item (1)
B14JB2 E0AM9	OTHER SOLID	4/23/02	1030	X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Thoren [signature] ERC	4.23.02 1045	[signature]	4-23-02 1045
Relinquished By/Removed From	Date/Time	Received By/Stored In LIMS [illegible]	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy {Cesium-137}; Strontium-89,90 -- Total Sr; Activity Scan; RCF GEA Shipping Screen

NOTE: This sample = original Sample # B14J82, B14J83, B14J84 sent to RCF. Samples picked up from RCF & Given Sample # B14JB2 on New COC with New label for STL Analysis. Page 2 of 2 shows RCF transfer.

Matrix *: S=Soil, SE=Sediment, SO=Solid, SL=Sludge, W=Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, WI=Wipe, L=Liquid, V=Vegetation, X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

0200

BHI-EE-011 (03/01/2002)

2 OF 2

RF 4.23.02

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-032-01	Page 1 of 1
Collector: R. Nielson / T. Myers	Company Contact: Jacques, ID — Telephone No.: 372-9651	Project Coordinator: TRENT, SJ	Price Code: 9L — Data Turnaround: 21 Days
Project Designation: B Plant - Air Filter Analysis	Sampling Location: 200 East	SAF No.: B02-032	Air Quality ☑
Ice Chest No.	Field Logbook No.: EL-1562-1 — COA: B221BT2W14	Method of Shipment: Government Vehicle	
Shipped To: Severn Trent Incorporated, Richland	Offsite Property No.	Bill of Lading/Air Bill No.	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None											
Type of Container	D/P											
No. of Container(s)	1											
Volume	60mL											

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	See item (1) in Special Instructions		RCF						
B14J82	OTHER SOLID	4-8-02	1357	X		10203						
B14J83	OTHER SOLID	4-10-02	1547	X		10204						
B14J84	OTHER SOLID	4-11-02	1324	X		10205						

NOTE: These Samples Combined given New Sample # B14J92 for Transfer To STL-Forensics Dough 1 of 2 Shows Custody Transfer.

CHAIN OF POSSESSION

	Sign/Print Names		
Relinquished By/Removed From: Troy Myers / T. Myers — Date/Time: 4/19/02 1130	Received By/Stored In: R. Nielson — Date/Time: 4/19/02 1130		
Relinquished By/Removed From: R. Nielson — Date/Time: 4/19/02 1300	Received By/Stored In: T. Duffey / J. Duffey — Date/Time: 4-19-02 1300		
Relinquished By/Removed From: T. Duffey / J. Duffey 4-23-02 — Date/Time: 1320	Received By/Stored In: — Date/Time:		
Relinquished By/Removed From: — Date/Time:	Received By/Stored In: — Date/Time:		
Relinquished By/Removed From: — Date/Time:	Received By/Stored In: — Date/Time:		
Relinquished By/Removed From: — Date/Time:	Received By/Stored In: — Date/Time:		

SPECIAL INSTRUCTIONS

** RCF is to store the samples for additional analysis at commercial laboratory.

(1) Gamma Spectroscopy (Cesium-137); Strontium-89,90 -- Total Sr; Activity Scan; RCF GEA Shipping Screen

AIR QUALITY DOCUMENT

Matrix *

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (03/01/2002)

ERC Radiological Counting Facility Analysis Report

RCF Number RCF10203 **Sample Date & Time** 4/8/2002 1357

Project ID: 200 EAST **SAF Number:** B02-032 **Date Analyzed** 4/22/2002 8:28

Sample ID: B14J82

Gamma Energy Analysis

Nuclide		Activity (pCi/g)	Error (pCi/g)	MDC (pCi/g)
K-40	<	1.0E+02		1.0E+02
Co-60	<	1.2E+01		1.2E+01
Cs-137	<	8.7E+00		8.7E+00
Eu-152	<	2.1E+01		2.1E+01
Eu-154	<	3.3E+01		3.3E+01
Eu-155	<	1.7E+01		1.7E+01
Tl-208	<	2.3E+01		2.3E+01
Pb-212	<	9.4E+01		9.4E+01
Bi-214	<	6.5E+01		6.5E+01
Pb-214	<	1.5E+01		1.5E+01
Ra-226	<	1.4E+02		1.4E+02
Ac-228	<	3.4E+01		3.4E+01
Pa-234	<	1.6E+01		1.6E+01
Th-234	<	6.6E+01		6.6E+01
U-235	<	4.0E+01		4.0E+01
Am-241	<	1.1E+01		1.1E+01

Tie TO B14JB7

QUALITATIVE ONLY

Total GEA (pCi/g) +/-

	Activity (pCi/g)		Error (pCi/g)
Gross Alpha**	N/R	+/-	N/R
Gross Beta	N/R	+/-	N/R

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested. <MDA = Less than detection limit.
All GEA results reported as "<" list the Minimum Detectable Concentration (MDC) value for that radionuclide.
Rounding error may result in the reported total GEA activity differing from the sum of the > MDA GEA values in the second significant digit.

For soils and natural samples, the following applies:

The analysis of U-238 is based on the activity of Pa-234m.
The analysis of Np-237 is based on the activity of Pa-233.
U-238dau is the activity of Pb-214 and Bi-214, short lived daughter products of U-238. Equilibrium between parent and daughter products probably does not exist in disturbed materials.
Th-232dau is the activity of Ac-228, Pb-212, and Tl-208, short lived daughter products of Th-232. Equilibrium between parent and daughter products may not exist in disturbed materials.
Other samples, not containing natural materials, may have inapplicable results for the Th, U, transuranics and daughter products. The results must then be balanced for the gross alpha analysis.
**The gross alpha results are not corrected for mass absorbtion
No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.

Analyst P.J.Snider 4/22/2002

Report Printed: Monday, April 22, 2002

Report To	Fax
Duance Jacques	373-7711
SJ Trent	372-9292
Joan Kessner	969-4823

0022

ERC Radiological Counting Facility Analysis Report

RCF Number RCF10204 **Sample Date & Time** 4/10/2002 1547

Project ID: 200 EAST **SAF Number:** B02-032 **Date Analyzed** 4/22/2002 9:31

Sample ID: B14J83

Gamma Energy Analysis

Nuclide		Activity (pCi/g)	Error (pCi/g)	MDC (pCi/g)
K-40	<	8.8E+01		8.8E+01
Co-60	<	1.1E+01		1.1E+01
Cs-137	<	6.1E+00		6.1E+00
Eu-152	<	2.2E+01		2.2E+01
Eu-154	<	2.7E+01		2.7E+01
Eu-155	<	1.7E+01		1.7E+01
Tl-208	<	2.7E+01		2.7E+01
Pb-212	<	1.1E+01		1.1E+01
Bi-214	<	7.7E+01		7.7E+01
Pb-214	<	1.6E+01		1.6E+01
Ra-226	<	1.4E+02		1.4E+02
Ac-228	<	3.7E+01		3.7E+01
Pa-234	<	1.6E+01		1.6E+01
Th-234	<	5.5E+01		5.5E+01
U-235	<	4.5E+01		4.5E+01
Am-241	<	9.2E+00		9.2E+00

TIE TO B14JB2

QUALITATIVE ONLY

Total GEA (pCi/g) +/-

	Activity (pCi/g)		Error (pCi/g)
Gross Alpha**	N/R	+/-	N/R
Gross Beta	N/R	+/-	N/R

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested. <MDA = Less than detection limit.
All GEA results reported as "<" list the Minimum Detectable Concentration (MDC) value for that radionuclide.
Rounding error may result in the reported total GEA activity differing from the sum of the > MDA GEA values in the second significant digit.

For soils and natural samples, the following applies:

The analysis of U-238 is based on the activity of Pa-234m.
The analysis of Np-237 is based on the activity of Pa-233.
U-238dau is the activity of Pb-214 and Bi-214, short lived daughter products of U-238. Equilibrium between parent and daughter products probably does not exist in disturbed materials.
Th-232dau is the activity of Ac-228, Pb-212, and Tl-208, short lived daughter products of Th-232. Equilibrium between parent and daughter products may not exist in disturbed materials.
Other samples, not containing natural materials, may have inapplicable results for the Th, U, transuranics and daughter products. The results must then be balanced for the gross alpha analysis.
**The gross alpha results are not corrected for mass absorbtion
No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.

Analyst T.J.Snider 4/22/2002

Report Printed: Monday, April 22, 2002

Report To	Fax
Duance Jacques	373-7711
SJ Trent	372-9292
Joan Kessner	969-4823

ERC Radiological Counting Facility Analysis Report

RCF Number RCF10205 **Sample Date & Time** 4/11/2002 1326

Project ID: 200 EAST **SAF Number:** B02-032 **Date Analyzed** 4/22/2002 10:5

Sample ID: B14J84

Tie to B14JB2

Gamma Energy Analysis

Nuclide		Activity (pCi/g)	Error (pCi/g)	MDC (pCi/g)
K-40	<	7.8E+01		7.8E+01
Co-60	<	1.0E+01		1.0E+01
Cs-137	<	9.7E+00		9.7E+00
Eu-152	<	2.1E+01		2.1E+01
Eu-154	<	3.3E+01		3.3E+01
Eu-155	<	1.6E+01		1.6E+01
Tl-208	<	2.0E+01		2.0E+01
Pb-212	<	8.3E+01		8.3E+01
Bi-214	<	7.0E+01		7.0E+01
Pb-214	<	1.5E+01		1.5E+01
Ra-226	<	1.5E+02		1.5E+02
Ac-228	<	3.1E+01		3.1E+01
Pa-234	<	1.6E+01		1.6E+01
Th-234	<	6.4E+01		6.4E+01
U-235	<	4.0E+01		4.0E+01
Am-241	<	9.6E+00		9.6E+00

QUALITATIVE ONLY

Total GEA (pCi/g) +/-

	Activity (pCi/g)		Error (pCi/g)
Gross Alpha**	N/R	+/-	N/R
Gross Beta	N/R	+/-	N/R

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested. <MDA = Less than detection limit.
All GEA results reported as "<" list the Minimum Detectable Concentration (MDC) value for that radionuclide.
Rounding error may result in the reported total GEA activity differing from the sum of the > MDA GEA values in the second significant digit.

For soils and natural samples, the following applies:

The analysis of U-238 is based on the activity of Pa-234m.
The analysis of Np-237 is based on the activity of Pa-233.
U-238dau is the activity of Pb-214 and Bi-214, short lived daughter products of U-238. Equilibrium between parent and daughter products probably does not exist in disturbed materials.
Th-232dau is the activity of Ac-228, Pb-212, and Tl-208, short lived daughter products of Th-232. Equilibrium between parent and daughter products may not exist in disturbed materials.
Other samples, not containing natural materials, may have inapplicable results for the Th, U, transuranics and daughter products. The results must then be balanced for the gross alpha analysis.
**The gross alpha results are not corrected for mass absorption
No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.

Analyst T.J.Snider 4/22/2002

Report Printed: Monday, April 22, 2002

Report To	Fax
Duance Jasques	373-7711
SJ Trent	372-9292
Joan Kessner	969-4823

0324

SEVERN TRENT SERVICES

Sample Check-in List

Date/Time Received: 4-23 1045

Client: BHI SDG #: W03760 NA [ ] SAF #: B02-032 NA [ ]

Work Order Number: J2D230207 Chain of Custody # B02-032-2

Shipping Container ID: NA Air Bill # NA

1. Custody Seals on shipping container intact? NA [ ] Yes [ ] No [✓]
2. Custody Seals dated and signed? NA [ ] Yes [ ] No [✓]
3. Chain of Custody record present? Yes [✓] No [ ]
4. Cooler temperature: _____ NA [✓] 5. Vermiculite/packing materials is NA [✓] Wet [ ] Dry [ ]
6. Number of samples in shipping container: 3
7. Sample holding times exceeded? NA [✓] Yes [ ] No [ ]
8. Samples have:
   _____ tape
   _____ custody seals
   _____ hazard labels
   ✓ appropriate samples labels
9. Samples are:
   ✓ in good condition
   _____ broken
   _____ leaking
   _____ have air bubbles
   (Only for samples requiring head space)
10. Sample pH taken? NA [✓] pH<2 [ ] pH>2 [ ]
11. Sample Location, Sample Collector Listed? * Yes [ ] No [✓]
    *For documentation only. No corrective action needed.
12. Were any anomalies identified in sample receipt? Yes [ ] No [✓]
13. Description of anomalies (include sample numbers): _____

Sample Custodian: Heidelberg Date: 4-23-02

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on _____ by _____ Person contacted _____

[ ] No action necessary; process as is.

Project Manager _____ Date _____

LS-023, 9/01, Rev. 4

4/23/2002 3:00:40 PM

Sample Preparation/Analysis

PRIORITY

SEQUENTIAL

Balance Id: PB3002-S

127642, BECHTEL HANFORD, INC.
Bechtel Hanford, Inc.

AW Gamma PrpRC5017
TA Gamma by HPGE
5I CLIENT: HANFORD

Pipet #: MA

Report Due: 05/14/2002 W03760

Sep1 DT/Tm Tech:

Batch: 2113395 FILTERS pCi/g

PM, Quote: BG1, 27038

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech:

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	QC Vial 2 Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date
1 E0AM9-1-AA J2D230207-1-SAMP			25.49 | Sa.			25	200	G3	0500	4/30/02
04/23/2002 10:30		AmtRec: 3XFILTERS	#Containers: 1		Scr Rst:		Alpha:		Beta:	
2 E0AM9-1-AE-X J2D230207-1-DUP								G8	0503	5/1/02
04/23/2002 10:30		AmtRec: 3XFILTERS	#Containers: 1		Scr Rst:		Alpha:		Beta:	
3 E0AW6-1-AA-B J2D230000-395-BLK			25.00					G8	0500	4/30/02
04/23/2002 10:30		AmtRec:	#Containers: 1		Scr Rst:		Alpha:		Beta:	
4 E0AW6-1-AC-C J2D230000-395-LCS			25.00	QCAG0766 PR.2/22/02 EX.8/27/02				G7	0501	
04/23/2002 10:30		AmtRec:	#Containers: 1		Scr Rst:		Alpha:		Beta:	

Comments: Don't count until 4-30-02. 4-29-02

All Clients for Batch:
127642, BECHTEL HANFORD, INC. Bechtel Hanford, Inc. , BG1, 27038

E0AM91AA-SAMP Constituent List:

Co-60	RDL:5.00E-02	pCi/g	LCL:	UCL:	RPD:	Cs-137	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
Eu-152	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:	Eu-154	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
Eu-155	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:						

E0AM61AA-BLK:

Co-60	RDL:5.00E-02	pCi/g	LCL:	UCL:	RPD:	Cs-137	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
Eu-152	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:	Eu-154	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
Eu-155	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:						

E0AM61AC-LCS:

Sample Preparation/Analysis

AW Gamma PrpRC5017
TA Gamma by HPGE
5I CLIENT: HANFORD

PRIORITY

Balance Id:

Pipet #: _____

Report Due: 05/14/2002

Sep1 DT/Tm Tech:

Batch: 2113395 pCi/g

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech:

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	QC Vial 2 Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date

```
E0AM91AA-SAMP Calc Info:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
E0AW61AA-BLK:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
E0AW61AC-LCS:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
```

5/2/02 1:56:10 PM

ICOC Fraction Transfer/Status Report

ByDate: 2/24/02, 5/3/02, Batch: '2113395', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting		Comments
2113395					
AC		InCnt1	WAGNERJ	4/29/02 2:55:58 PM	
SC			WagarR	IsBatched 4/23/02 3:00:31 PM	ICOC_RADCALC v4.5.3.2
SC			WAGNERJ	InPrep2 4/29/02 2:55:58 PM	RICH-RC-5017 REVISION 3
SC			DAWKINSO	InCnt1 4/29/02 4:09:32 PM	RICH-RD-0007 REVISION 2
AC			DAWKINSO	4/29/02 4:09:32 PM	

0028

AC: Accepting Entry; SC: Status Change

4/23/2002 3:00:39 PM

Sample Preparation/Analysis

Balance Id: PB3002-S

127642, BECHTEL HANFORD, INC.
Bechtel Hanford, Inc.

CI Sr-Total PrpRc5016, SepRC5006
TH Total Strontium by GPC
5I CLIENT: HANFORD

PRIORITY

Pipet #: _____

Report Due: 05/14/2002 W037100

Sep1 DT/Tm Tech: 5-10-02 12:05 ✱

Batch: 2113394 **FILTERS** **pCi/g**

PM, Quote: BG1, 27038

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: QW

Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date
1 E0AM9-1-AC J2D230207-1-SAMP		1 Sq. (Sa)	SRTA7071 PR.3/15/02 EX.2/21/03		1.5"	86.9 (mg)	100	28A	1956	5/10/2002 QW
04/23/2002 10:30		AmtRec: 3XFILTERS	#Containers: 1			Scr Rst:		Alpha:		Beta:
2 ~~E0AM9-1-AD-X~~ J2D230207-1-~~DUP~~ 2S-302										
04/23/2002 10:30		AmtRec: 3XFILTERS	#Containers: 1			Scr Rst:		Alpha:		Beta:
3 E0AW4-1-AA-B J2D230000-394-BLK		1 Sq.	SRTA7072 PR.3/15/02 EX.2/21/03			88.6		28B	1956	5/10/2002 QW
04/23/2002 10:30		AmtRec:	#Containers: 1			Scr Rst:		Alpha:		Beta:
4 E0AW4-1-AC-C J2D230000-394-LCS			STSB0579 PR.4/12/02 EX. 2/21/03			83.9		28C	1956	5/10/2002 QW
04/23/2002 10:30		AmtRec:	#Containers: 1			Scr Rst:		Alpha:		Beta:

Comments: Please remove dup. 2S-302 5-302

All Clients for Batch:
127642, BECHTEL HANFORD, INC. Bechtel Hanford, Inc. , BG1, 27038

E0AM91AC-SAMP Constituent List:
Sr-89/90 RDL:1.00E+00 pCi/g LCL: UCL: RPD:
E0AW41AA-BLK:
Sr-89/90 RDL:1.00E+00 pCi/g LCL: UCL: RPD:
E0AW41AC-LCS:

E0AM91AC-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
E0AW41AA-BLK:

5/13/02 1:55:46 PM

ICOC Fraction Transfer/Status Report

ByDate: 4/13/02, 5/14/02, Batch: '2113394', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
2113394						
AC		InRev1	WAGNERJ	4/29/02 2:56:10 PM		
SC			WagarR	IsBatched	4/23/02 3:00:31 PM	ICOC_RADCALC v4.5.3.2
SC			WAGNERJ	InPrep2	4/29/02 2:56:10 PM	RICH-RC-5016 REVISION 3
SC			WAGNERJ	Prep2C	5/6/02 9:00:03 AM	RICH-RC-5016 REVISION 3
SC			SteffensB	InSep1	5/10/02 11:02:57 AM	RICH-RC-5006 REVISION 4
SC			SteffensB	Sep1C	5/10/02 1:54:06 PM	RICH-RC-5006 REVISION 4
SC			DAWKINSO	Cnt1C	5/10/02 4:35:13 PM	RICH-RD-0003 REVISION 2
SC			BlackCL	CalcC	5/11/02 8:15:33 AM	RICH-RD-0003 REVISION 2
SC			KenitzerP	InRev1	5/13/02 10:33:47 AM	RICH-RC-0002 REVISION 5
AC			WAGNERJ	5/6/02 9:00:03 AM		
AC			SteffensB	5/10/02 11:02:57 AM		
AC			SteffensB	5/10/02 1:54:06 PM		
AC			DAWKINSO	5/10/02 4:35:13 PM		
AC			BlackCL	5/11/02 8:15:33 AM		
AC			KenitzerP	5/13/02 10:33:47 AM		

6930

AC: Accepting Entry; SC: Status Change